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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,753	10/12/2004	Nitzan Paldi	28723	7324
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Martin Moynihan Anthony Castorina Suite 207 2001 Jefferson Davis Highway Arlington, VA 22202			EXAMINER PURDY, KYLE A	
			ART UNIT 1611	PAPER NUMBER
			MAIL DATE 05/27/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/510,753

**Applicant(s)**

PALDI ET AL.

**Examiner**

Kyle Purdy

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/12/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Status of Application*

1. Claims 1-22 are pending and claims 1-22 are presented for examination on the merits. The following rejections are made.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-8, 10-12, 14-17 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Eigenbrode et al. (Proceedings R. Society London B, 2002, 269, 455-460), evidenced by ARS, Inc. Super-Q VCT trap and Mih et al. (Overview of Irish potato viruses and virus diseases, 1-8).**

4. Eigenbrode et al. ('Eigenbrode) is drawn to collecting and analyzing volatiles from potato plants infected with the potato leafroll virus (PLRV). The goal of the research was to determine if volatile cues influence the response of *M. persicae* (aphids) to PLRV-infected potato plants and to compare the aphid response to other plants either infected with potato virus X (PVX) or potato virus Y (PVY) or uninfected plants (see page 455, 2<sup>nd</sup> column). Moreover, another goal of the study was to isolate and identify volatile components which may influence aphid response to the infected vs. uninfected plants (see page 455, 2<sup>nd</sup> column).

5. PLRV is a virus which has to be transmitted by insect vector. The method for infecting the potato plants is disclosed on page 456, 1st column, (c) Inoculation. Briefly, the potato plants were exposed to aphids carrying the vector. PLRV-containing aphids fed upon the plants which introduced the virus thereby infecting the plant with the virus. Infected plants were propagated for four weeks before the experimentations began (see instant claims 14 and 15). It should be pointed out the PLRV can be either a virulent and avirulent type of virus and is also a persistent virus (see Mih et al., Table 1; see instant claims 2-5). However, PVY and PVX are both known to be a non-persistent virus (see Mih et al., Table 1; see instant claims 5 and 6). PVX and PVY infection methods are taught on page 456, 1st column, (c) inoculation.

6. The volatiles collected from the infected plants were done using Super-Q traps. Super-Q traps are known as volatile collector traps (VCTs) which act as a chemical filter designed for collecting trace, low level organic compounds from sampled air or gas sources (see ARS, Inc., SUPER-Q VCT trap; see instant claims 1, 8 and 21). The analysis of the absorbates by GC/MS allowed for the differential and comparative analysis between the various types of infected and uninfected plants which is shown in Table 2 (see instant claim 10). For instance, 2-hexen-1-ol is emitted in a much larger amount (755 ng) in PLRV plants as opposed to uninfected plants (111 ng) (see instant claim 11). On the other hand PVX infected plants appear to emit lower amounts of heptanal (289 ng) as compared to the uninfected plants (599 ng) (see instant claim 12).

7. Eigenbrode also monitors the behavior of the aphids when exposed to the infected plants. Specifically, see pages 456-457, (d)-(i) (see instant claims 16 and 17). Briefly, the method of Experiment (d), for example, entails placing 100 aphids into a darkened arena (illuminated using a red light) in order to eliminate visual cues that could influence visual behavior. In the darkened

arena, the aphids were exposed to PLRV, PVX and PVY infected plants and uninfected plants.

The aphids behavior was monitored and analyzed using a video recorder.

8. Thus, Eigenbrode anticipates the instantly rejected claims.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**10. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eigenbrode et al. (Proceedings R. Society London B, 2002, 269, 455-460) in view of Quiroz et al. (J. Chemical Ecology, 1998, 24(1), 113-124) and Dickens et al. (Naturwissenschaften, 1990, 77, 29-31), evidenced by ARS, Inc. Super-Q VCT traps and Mih et al. (Overview of Irish potato viruses and virus diseases, 1-8).**

11. Eigenbrode, ARS, Inc. and Mih are relied upon for disclosure described in the rejection of claims 1-8, 10-12, 14-17 and 19-21 under 35 U.S.C. 102(b).

12. Eigenbrode fails to teach desorbing the volatiles from the solid absorbent material. Moreover, Eigenbrode fails to teach quantifying insect response to plant volatiles by using a trapping or insect olfactometer mechanism. Additionally, Eigenbrode does not specifically disclose identifying volatiles unique to infected plants.

13. The teaching of Dickens et al. ('Dickens) is drawn to quantifying the enhancement of insect pheromone response by green leaf volatiles. The experiment compared insect response to

2-hexen-1-ol vs. a multi-component aggregation pheromone complex. The preferential response of the insects to the two systems was quantified using insect traps (see page 29, 3<sup>rd</sup> column, 2<sup>nd</sup> paragraph; see instant claim 18).

14. The teaching of Quiroz et al. ('Quiroz) is drawn to olfactometer-assessed responses of aphids to wheat and oat volatiles. Voaltiles used were 2-hexenyl acetate, 3-hexenol, 2-hexenol, octanol and so on (see abstract). To gauge insects response to volatiles, an insect was placed in a quadratic arena with test tubes containing control odors to three of the four arms. On the forth arm the treatment chemical was placed. This set up is the insect olfactometer. The time the aphid spent in each arm was calculated over a 15 minute interval which ultimately indicated if the insect was or was not attracted to the treatment chemical (see instant claim 19).

15. Thus, it would have been obvious to one ordinarily skilled in the art at the time the invention was made to combine the teachings of Eigenbrode, Quiroz and Dickens with a reasonable expectation for success in arriving at the instantly claimed invention. Eigenbrode teaches many of the inventions limitations (see above). With respect to desorbing volatiles from the Super-Q trap (i.e. absorbent), it would have been obvious to one ordinarily skilled in the art to subject the absorbent used by Eigenbrode to a chemical/heat treatment to release (desorb) the absorbate (i.e. volatiles) for chemical identification via GC or GC/MS. In fact, the Super-Q trap data sheet states that the absorbate can be released either by heat or chemical treatment. Eigenbrode fails to teach identifying plant volatiles unique to that of the infected plant nor does Eigenbrode teach quantifying insect response to chemical odors by a trapping mechanism or by insect olfactometry. In regards to identifying new volatiles, the technique taught by Eigenbrode would allow one to perform such a task. Eigenbrode specifically teaches a differential and

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quantitative analysis for emitted compounds from infected and uninfected plants. One would readily be capable of identifying a unique volatile using such a method if so desired. With respect to the trapping and insect olfactometer methods of quantifying insect response to plant volatiles, both are considered obvious in view of the prior art. Trapping has been known and used within the field of chemical ecology for many years. Such a method is taught by Dickens which uses traps to quantify aphid response to a single compound vs. a multi-component pheromone blend. On the other hand, insect olfactometers have also been used to describe insect preference for specific odors. Such a method is disclosed by Quinoz (see above). It follows that one of ordinary skill would have been capable of combining the teaching of Eigenbrode, Quinoz and Dickens with a reasonable expectation for success, especially with the references all being within the same general field of endeavor (i.e. monitoring and quantifying insect behaviors to volatile components in plants). As such, the instantly claimed invention is not a product of innovation, but rather one of ordinary skill and common sense. Therefore, the invention as a whole is *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in absence of evidence to the contrary.

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle A. Purdy whose telephone number is 571-270-3504. The examiner can normally be reached from 9AM to 5PM.

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17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on 571-272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*/Kyle Purdy/  
Examiner, Art Unit 1611  
May 19, 2008*

**/MP WOODWARD/  
Supervisory Patent Examiner, Art Unit 1615**